



Reinstating *Olearia stricta* (Asteraceae) for an uncommon shrub from montane regions of SE Australia, and notes on *O. ramulosa*

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Introduction

Olearia ramulosa (Labill.) Benth., as outlined in recent treatments (e.g. Lander 1992, Walsh and Lander 1999), is a morphologically diverse species causing much difficulty and confusion for taxonomists attempting to distinguish and describe various infraspecific taxa within it. In the most contemporary revision dedicated to this species, Willis (1956) recognised six varieties for Victoria. Three of these taxa have since been rejected (Lander 1992; Walsh and Lander 1999; Walsh and Stajsic 2007; VicFlora 2019) although some local variants have been documented. For example, a distinct form from subalpine and montane areas of Victoria with a strong, curry-like odour, stems with dense, stalked glandular-hairs, virtually no woolly hair, and blue-mauve ligules was accounted for by Walsh and Stajsic (2007) and the most recent iterations of VicFlora (2019) as *Olearia* aff. *ramulosa* (Omeo). Similar plants have also been observed in comparable habitats in the Namadgi area in the ACT and Tinderry Ranges in New South Wales, but differ from those in Victoria in that at least some mature leaves are lobed and the abaxial leaf surface is woolly. Lobing is common in juvenile leaves of *O. ramulosa* s.l. and related species (including the variants mentioned above; e.g. MEL2384920 and

Abstract

Olearia stricta Benth. is here reinstated for plants from subalpine and montane areas in Victoria previously regarded as an unnamed taxon affiliated with *O. ramulosa* (Labill.) Benth. A new subspecies, *O. stricta* subsp. *parvilobata* Messina is described to accommodate a distinct entity from similar environments in the ACT and New South Wales. This change in nomenclature affects the taxonomic concept of *O. ramulosa* var. *stricta* (Benth.) J.H. Willis. The majority of plants previously included in that variety are excluded from *O. stricta* and subsumed into a broadly-defined *O. ramulosa* var. *ramulosa*.

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MEL2369533), but these soon transition to the entire, more or less linear leaves of the adult plants. Likewise, young stems and leaves of *Olearia* aff. *ramulosa* (Omeo) may be woolly, but this indumentum type is soon lost. It is suggested that the Namadgi/Tinderry variant represents a neotenous state, retaining juvenile leaf features.

Olearia stricta

During the process of preparing descriptions for these entities, it became apparent that Victorian specimens clearly matched Bentham's description and type specimen of *Olearia stricta* Benth. (Fig. 1). Willis (1956) reduced *O. stricta* to *O. ramulosa* var. *stricta* (Benth.) J.H. Willis, concluding that this glandular-septate form was at best an extreme local development that could not be taxonomically segregated from other forms of *O. ramulosa* from mountainous/inland regions which have mixed eglandular-septate and woolly hairs and sessile glands. This perspective was largely based on collections by Mueller of both plants with glandular-septate hairs (as per the type) and others with mixed eglandular-septate and woolly hairs from the type location for *O. stricta* (Mt Buffalo), with the latter specimens apparently not been seen by Bentham at the time of describing *O. stricta* (Willis 1956). However, following examination of additional specimens and extensive field observations, it is clear that this glandular-septate form is morphologically distinct and occurs in discrete populations that are not found in close proximity to the eglandular-septate/woolly-haired form. The only records of the eglandular-septate/woolly-haired form in high montane/subalpine areas in eastern Victoria and the southern highlands of NSW are historic, with vague location information (e.g. Mt Buffalo, a large c. 300 km² massif) and it seems likely that these were collected from lower elevations on these mountains.

Plants from high elevations in Victoria, the ACT and New South Wales have a unique combination of characters that clearly distinguish them from *Olearia ramulosa* s.s. (Type from Tasmania). As well as the dense glandular setae on the stems (Fig. 2a), plants are highly viscid, lack woolly hair except when young (retaining this juvenile state in the Namadgi/Tinderry entity), have capitula that are terminal on main shoots

and short side shoots (Fig. 2b), and have blue-mauve ligules. Some of these characters are occasionally encountered in the various forms of *O. ramulosa*, but never in combination, as outlined above. This unique combination of characters, together with the distinct geographic and ecological niche, suggest that *O. stricta* is more appropriately treated at species rank.

Olearia ramulosa

Reinstating *Olearia stricta* with a restricted circumscription has implications for the other plants previously also included in *O. ramulosa* var. *stricta* (i.e. plants predominantly with eglandular-septate hairs on their stems and dense woolly hair on the abaxial leaf surface from the Grampians (Fig. 2c, see note in Taxonomy section), Mt Cole, Brisbane Ranges and Warby Ranges, and plants with a mixture of woolly and eglandular-septate hairs on their stems from East Gippsland in Victoria, and the South Coast of New South Wales). It is unclear at this stage whether or not these represent a distinct taxon within *O. ramulosa*. If these prove to be distinct from the more widespread coastal forms (previously treated as a distinct variety), there are several names at varietal rank that may be suitably applied, including *O. ramulosa* var. *longisetosa* J.H. Willis, *O. ramulosa* var. *rigida* J.H. Willis, *O. ramulosa* var. *intermedia* Ewart, and *Eurybia ramulosa* var. *aculeata* (Labill.) Hook.f. However, an initial inspection of specimens suggests that plants exhibit a range of continuous variation, from entirely woolly to almost entirely eglandular-septate, and that characters used to distinguish these taxa (e.g. Willis 1956) are unreliable. It remains unclear if these extremes can reasonably be divided into taxa on the basis of being 'mostly woolly' or 'mostly setose'. Similar variation in stem indumentum (woolly and/or eglandular-septate) is also present in the closely related *O. microphylla* (Vent.) Maiden & Betche from New South Wales and, as yet, no such attempt has been made to further divide this species on the basis of predominant hair type. It seems unwise to propose a new and potentially short-lived taxonomy prior to the completion of a revision of this group which may ultimately conclude that the indumentum variants are unworthy of recognition. In the interim, these varieties are recommended to be subsumed into a more broadly



Figure 1. Lectotype of *Olearia stricta* (MEL1547336).

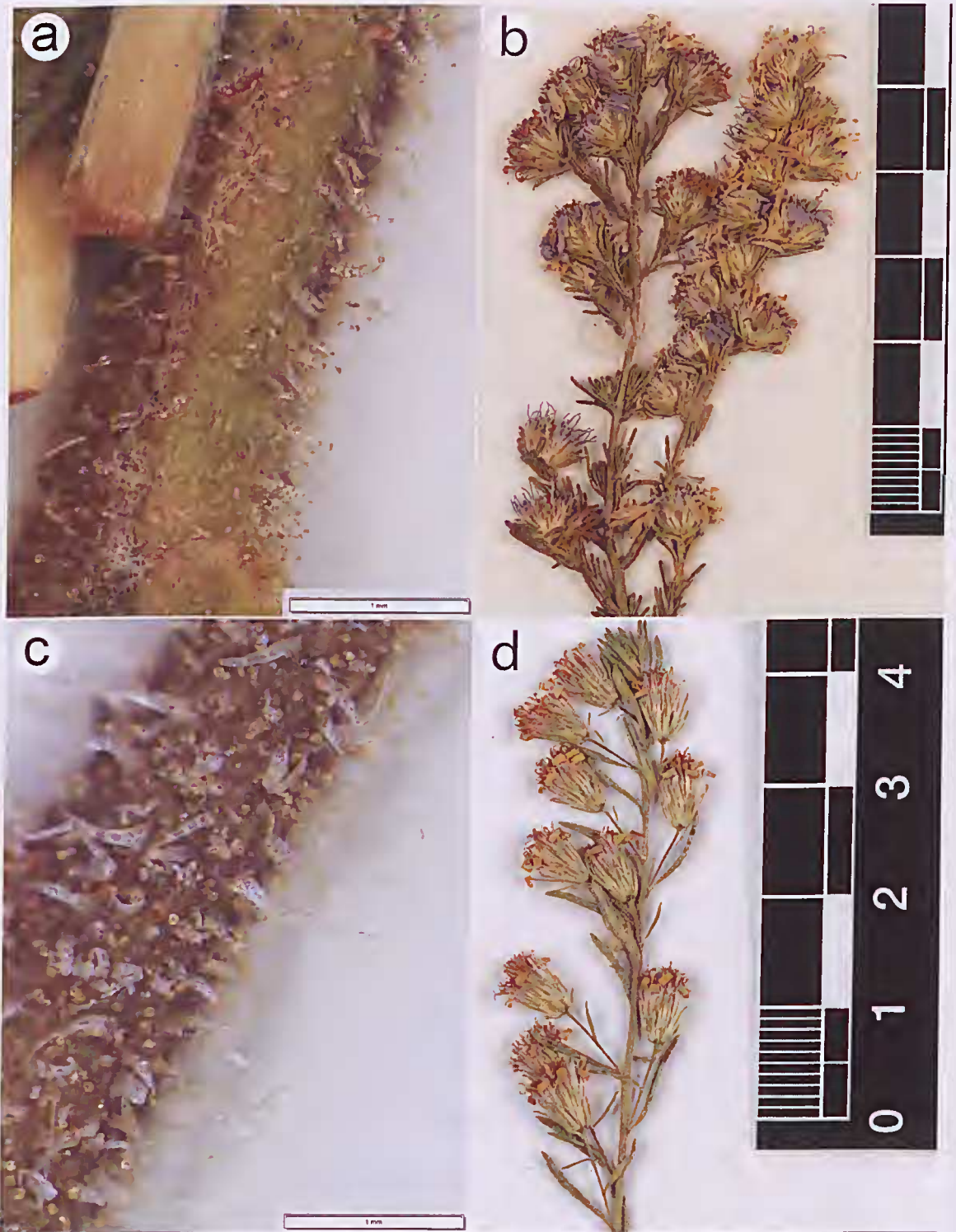


Figure 2. Comparison of stem indumentum and inflorescence structure in *Olearia stricta* and *O. ramulosa*. **a.** *Olearia stricta* subsp. *stricta*, glandular setae (A. Messina 295, MEL2361219); **b.** *Olearia stricta* subsp. *stricta*, capitula terminal main and short side branches (M.G. Corrick 6492, MEL564801); **c.** *Olearia ramulosa* (long-setase Grampians form) long eglandular setae and short glandular hairs (M.G. Corrick 10217, MEL689000); **d.** *Olearia ramulosa* (East Gippsland form) capitula axillary and pedunculate (N.G. Walsh 8540, MEL2404828).

circumscribed *O. ramulosa* var. *ramulosa*, leaving *O. ramulosa* var. *tomentosa* J.H. Willis as the only other reliably recognised entity within *O. ramulosa*. This taxon is currently only known from the St Andrews area north-east of Melbourne (see note on typification of this taxon in Taxonomy section). Plants are rhizomatous (currently believed to be unique in the group) and have long, linear leaves with dense woolly hair on the abaxial surface that extends out from beyond the revolute margins (VicFlora 2019).

Taxonomic implications

Ongoing work into the boundaries of the many forms of *Olearia ramulosa* continues, and it is now clear that a full revision of several poorly-defined species is required (i.e. *O. ramulosa*, *O. tubuliflora* (Sond. & F. Muell. ex Sond.) Benth., *O. microphylla*, *O. minor* (Benth.) Lander, *O. floribunda* (Hook.f.) Benth., *O. algida* N.A. Wakef., *O. sp. 1* (*sensu* Walsh & Lander 1999), *Eurybia propinqua* DC., *Olearia brachyphylla* (F. Muell. ex Sond.) N.A. Wakef., *Eurybia dampieri* A. Cunn. ex DC.). Preliminary investigations have revealed that *O. ramulosa* has been largely misapplied in South Australia and Queensland. Most of the specimens from South Australia held at AD under the name *O. ramulosa* appear to represent a distinct species or possibly relate to *Olearia* sp. 1 (*sensu* Walsh and Lander 1999), *Eurybia propinqua* or *Eurybia dampieri*. These plants have little to no setose hair on stems, the capitula are sessile in leaf axils and typically have a reduced number of florets. An initial inspection of AD specimens suggests that *O. ramulosa* only occurs in the South East region of South Australia. Similarly, *O. ramulosa* specimens held at BRI from the Darling Downs region in Queensland appear better placed within *O. minor*. These plants have short, non-clustered, flat leaves and relatively large capitula that are terminal

on main branches. As currently understood, *O. minor* also occurs on the western slopes in New South Wales, further supporting the placement of the BRI specimens.

A full revision of the *Olearia ramulosa* complex is outside the scope of the current paper. However, to avoid delays in the recognition of this distinct, rather rare species of the montane and subalpine regions of eastern Australia, *O. stricta* Benth. is here reinstated. Geographically isolated plants from Namadgi and Tinderry Ranges with retained neotenous features are recognised as *O. stricta* subsp. *parvilobata* Messina.

Taxonomy

Olearia stricta Benth. *Fl. Austral.* 3: 485 (1867)

Olearia ramulosa var. *stricta* (Benth.) J.H. Willis, *Muelleria* 1:27 (1956) p.p.

Olearia aff. *ramulosa* (Omeo) *sensu* Walsh and Stajsic (2007).

Type: VICTORIA. Rocks of Mount Aberdeen, Buffalo Range, at an elevation of 4000 ft., *F. Muellers.n.*, 26.ii.1852 (lecto: MEL1547336!; probable isolecto: K1089779; MEL2165250!).

Viscid shrubs to c. 1 m high with a curry-like odour; branchlets glandular with moderate to dense cover or stalked glandular hairs (0.1–0.5 mm long) and sessile glands, sometimes with arachnoid or woolly hairs on new growth. Leaves alternate, sessile to subsessile, forming lax clusters, spreading to subappressed; lamina linear, 5–10(–15) mm long, (0.2–)0.5–1.0(–1.2) mm wide (excluding lobes), entire or with a pair of lobes in middle to upper third; margins recurved to revolute, abaxial surface remaining visible to obscured by margins; apex usually obtuse; adaxial surface asperate, with scattered sessile glands and glandular hairs, sometimes with

Key to *Olearia ramulosa* and *O. stricta*

- 1 Stems with dense glandular setae and sessile glands, occasionally with some sparse woolly or arachnoid hairs (often restricted to young growth, where initially quite dense); adult leaves with abaxial surfaces lacking woolly hair or, if woolly hair present, then at least some leaves lobed; capitula sessile or subsessile, terminal on main shoots and short leafy lateral branches; ligules blue-mauve; montane and subalpine areas mostly above 1000 m elevation (ACT, NSW, VIC): *O. stricta*
- 1: Stem indumentum variable, with eglandular setae and (usually) woolly hairs and usually at least some (sometimes abundant) sessile glands, glandular setae absent, or rarely present and shorter than the more abundant eglandular setae; capitula sessile, terminal on short lateral shoots or pedunculate from leaf axils, rarely some terminal on main stems; ligules often white, sometimes blue-mauve; widespread, from coastal to montane regions, usually below 1000 m elevation (SA, NSW, VIC, TAS): *O. ramulosa*

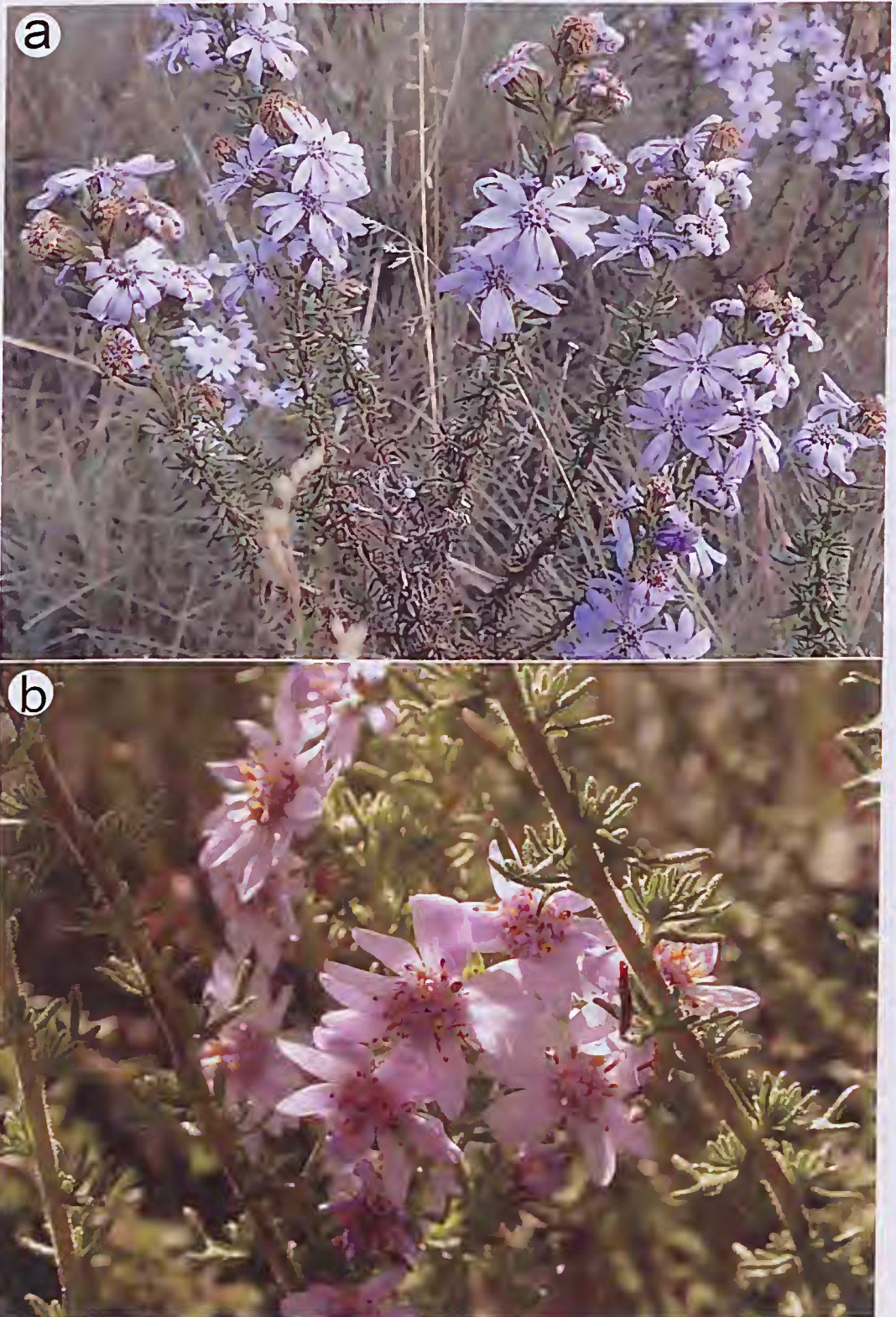


Figure 3. *Olearia stricta*. a. *Olearia stricta* subsp. *stricta*, Howitt Rd., Snowy Range (A. Messina 814, MEL2384920);
b. *Olearia stricta* subsp. *parvilobata*, cultivated plant, RBGV.

scattered broad-based eglandular hairs; abaxial surface glabrous to glabrescent, with scattered sessile glands and short glandular hairs along midrib, sometimes with very sparse woolly hair, or with a moderate cover of woolly hair. Capitula sessile to subsessile, solitary, occasionally in 2–3-flowered clusters, terminal on ends of stems or short lateral branches, 6–8 mm diam. (excluding ligules); bracts 2–3-seriate, graduating, 2.5–5 mm long, often purple-tipped, viscid, glabrous to glabrescent or with a patch of woolly hair near apex; ligulate florets 12–20, ligule 5–8 mm long, longer than bracts, pink, mauve or blue, very rarely white; disc florets 6–20, yellow or mauve. Cypselas flattened obovoid, 1.5–2 mm long, 5–6-ribbed, with simple hairs and sessile glands; pappus c. 3 mm long, in 2 rows, the outer bristles shorter than the inner.

Typification notes: Willis (1956) cites MEL1547336, which has detailed notes on the plant and location and is dated 26 Feb 1853 as the only specimen seen by Bentham and hence the type for *Olearia stricta*. However, in Bentham's protologue he cites the elevation (albeit erroneously) as 4000 ft., a detail not on the label of this specimen. Two other specimens (K1089779 and MEL2165250) are simply labelled 'Mt Aberdeen 5000 ft., F. Mueller'. It is almost certain that at least the specimen at K was viewed by Bentham, and that the three were all part of the same gathering. Clearly the MEL specimen with Bentham's mark (a distinctive handwritten 'B') on the label (MEL1547336) was seen, and is here selected as the lectotype. The other two specimens with less detailed labels are regarded as probable isolectotypes. A fourth specimen at MEL is labelled 'rocky summit of Mt Aberdeen, March 1853' (MEL2165251). This was collected by Mueller on the same trip to Mt Buffalo, but was apparently gathered on a different day and so cannot be treated as a type.

Another Mueller specimen at MEL with the same label information 'Mt Aberdeen, 5000 ft.' (MEL2163612) doesn't match the type of *Olearia stricta*, and, despite the label, is presumed to have been collected at a

lower altitude on Mt Buffalo as it conforms with other *O. ramulosa* specimens from Mt Buffalo foothills (e.g. MEL2109790).

Olearia stricta subsp. *stricta*

Viscid shrubs; branchlets with dense glandular hairs and sessile glands, rarely with scattered arachnoid or woolly hairs (usually restricted to young growth). Leaves lobed when young, soon entire; margins revolute to recurved, sometimes obscuring abaxial surface; adaxial surface usually with broad-based eglandular hairs, glandular hairs and sessile glands; abaxial surface glabrescent, with sessile glands and stalked glandular hairs restricted to the midrib, woolly hair absent or very sparse. Involucral bracts viscid, green, glabrous to glabrescent, lacking woolly hair. Flowers Feb.–Apr. (Figs. 1, 2a, b, 3a).

Selected specimens examined: VICTORIA. Nunniong-Timbarra-Tambo State Forest, Watts Creek Track area, 6.5 km ESE of Ensay, 03.v.1985, *A.C. Beauglehole 79511* (CANB, MEL, NSW); Gorge Creek, near Buchan River, 2.iii.1969, *K.C. Rogers s.n.* (MEL); Omeo Highway, c. 26 km (by road) N of Omeo, 6.ii.2005, *N.G. Walsh 6246* (CANB, MEL, NSW); Alpine National Park, Mt Cobbler area. Head of waterfall on creek draining Cobbler Lake, c. 350 NNW from lake's edge, 11.iii.2013, *N.G. Walsh 7795* (CANB, MEL); Road edges of jeep track from Doolan's Rd. to the Moroka R. [River] below Mt. Kent, 13.iii.1966, *J.H. Willis s.n.* (MEL); Beside logging track leading to The Pinnacles (ca. 45 km direct SE of Mt. Howitt), 10.iii.1980, *M.G. Corrick 6492* (MEL); 3.2 km south of Anglers Rest (Bridge over Cobungra River), 19.v.2011, *A. Messina 570* (MEL); Alpine National Park, Snowy Range, Howitt Rd, just S of the Bastards Neck, 19.ii.2015, *A. Messina 814* (CANB, K, MEL); Alpine National Park, walking track to Long Hill (extension of Dingo Hill Rd), slight knoll before rock shelter, approx. 6.8 km west of Tamboritha Saddle, 2.iv.2011, *A. Messina 488* (MEL); Walking Track, south side of Big Hill, on saddle at foot of hill, approx. 2 km SW of Mount Howitt, 26.iii.2009, *A. Messina 295* (LTB, MEL); Snowy Range, 1.1 km east of Horseyard Gap campground on road to the Pinnacles, 25.iii.2008, *A. Messina 184* (MEL); Mt Buffalo National Park, beside Mt Buffalo Tourist Rd, 250 m W from Mackeys Lookout, 4.iv.2006, *N.G. Walsh 6435* (CANB, MEL, NSW).

Key to subspecies of *O. stricta*

- 1 Adult leaves lacking woolly hair on abaxial leaf surface, margins entire; involucral bracts lacking woolly hair near apex; dry rocky hills in montane and subalpine regions of eastern Victoria: *O. stricta* subsp. *stricta*
- 1: Adult leaves with woolly hair on abaxial surface, margins of at least some leaves with one or two pairs of oblong lobes; involucral bracts with scattered woolly hairs in upper third; subalpine regions of ACT and NSW: *O. stricta* subsp. *parvilobata*

Distribution: Occurs on granite near Omeo, Ensay and Mt Buffalo, but also on Silurian sediments near Buchan and the Snowy Range and Mt Cobbler areas, Victoria, between c. 700–1400 m elevation.

Notes: Sometimes approaches *Olearia ramulosa*, which can be distinguished by the dense woolly indumentum on the abaxial leaf surface, stems that are either moderately to densely woolly or, if mainly setose, hairs mostly eglandular, and capitula either sessile and terminal on very short lateral branches (rarely terminal on main stems) or axillary and pedunculate (Fig. 2d).

Densely glandular plants from the Grampians with blue ligules resemble *Olearia stricta* subsp. *stricta*, but the stem indumentum includes glands that are usually sessile or only shortly stalked and overtopped by much longer eglandular setae (Fig. 2c). They have very long and broad-based setose hairs on adaxial leaf surface and bracts, and the capitula are often pedunculate from leaf axils. As such, these are retained in *O. ramulosa*. Plants growing on dry rocky hills at lower elevations (c. 500 m) from the central western slopes in New South Wales (e.g. Cudal, Boorowa and Cobar etc.) also have a tendency to have gland-tipped hairs on stems and terminal capitula. However, these plants are also very woolly on stems, leaves and involucral bracts, and are white-flowered. These appear to be somewhat intermediate between *O. ramulosa* and *O. minor* (but are distinguished from the latter by the clustered leaves).

A form on Mt Elizabeth in Victoria is quite delicate with stem indumentum more woolly than typical. However, plants possess a moderate to dense cover of glandular hairs on stems and have terminal capitula, and are best placed in *O. stricta* subsp. *stricta*.

***Olearia stricta* subsp. *parvilobata* Messina subsp. nov.**

Type: AUSTRALIAN CAPITAL TERRITORY: Booroomba Rocks, 9.ii.2006, *P.Carmen* 229 (holo: CANB679681!; iso: MEL2447642!).

Viscid shrubs; branchlets with dense glandular hairs, sessile glands and often some woolly or arachnoid hairs. Adult leaves in clusters, with at least the lowest leaf of some clusters with one or two pairs of oblong lobes; margins revolute to recurved, not obscuring abaxial surface; adaxial surface with sessile glands; abaxial surface with woolly hair and scattered sessile glands.

Involucral bracts viscid, green, with woolly hair in upper third. Flowers Jan.–Apr. (Fig. 3b).

Selected specimens examined: AUSTRALIAN CAPITAL TERRITORY. 3 km NW of Booroomba Rocks, 15.ii.1986, *I.R.Telford* 10188 (CANB); Namadgi National Park, 100 m W of Boboyan Rd, 1 km N of Yerrabi Track walking trail, 6.iii.1994, *D.Mallinson* 342 (CANB); Namadgi National Park, c. 0.5 km S of Nursery Creek, 4.iii.1993, *C.H.Broers* 368 (CANB); Booth Range, N of Shanahans Mountain, 6.ii.1986, *F.Ingwesen s.n.* (CANB); Sentry Box Hill, Boboyan Divide, 40 Miles SSW of Canberra, 14.iii.1971, *L.G.Adams* 2572 (CANB); Booroomba Rocks, 9.ii.2006, *P.Carmen* 300 (CANB); Namadgi National Park, c. 1.69 km due NE of Honeysuckle Campground, on W edge of granite slab, c. 50 m W of Great Alpine Track, S.iv.2013, *A.Messina* 680 (MEL). NEW SOUTH WALES. Tinderry Mountains, 12.iii.1972, *T.G.Hartley* 13614 (CANB).

Distribution: Very restricted in distribution, known from relatively few small populations in Namadgi National Park, Australian Capital Territory and Tinderry Ranges, New South Wales, growing amongst granite boulders in low, open subalpine woodland and heathland at c. 1000–1330 m elevation.

Notes: A specimen from Shanahans Mountain walking track (CANB 797741) is somewhat intermediate between this taxon and *Olearia ramulosa*. It is very woolly hairy and has few stalked glands on stems, and leaves are quite long and apparently not lobed. This may just represent an unusual individual, as other records from this area exhibit features typical for this taxon. Other plants with largely unlobed leaves have been observed (eg. MEL 2379755).

A note on the typification of *Olearia ramulosa* var. *tomentosa* J.H.Willis

In assigning the holotype of this taxon, Willis (1956) was uncertain of the collector, citing 'Victoria centrali, "Mt. Mclvor, Nov." ?F. Mueller' (MEL658694A). Presumably Mueller was thought to be the collector as the detailed labels on the specimen are in his hand. Subsequent to his publication, Willis appears to have annotated the specimen noting the year of collection as 1854. Mueller was known to be in this area in the summer of 1852–53 but not in 1854, as he was collecting in the Victorian Alps during that time. There are several other specimens at MEL with this location and year (1854) attributed to J.W.T.L. von Blandowski, and inspection of the original label (not the detailed ones of Mueller) shows that

they match labels on other Blandowski specimens. Consequently Blandowski should be attributed as the collector of this specimen. The sheet at MEL has three elements, namely the holotype (labelled part A) and two other elements assigned by Willis as 'paratypes' (part B and C). Part B also has a Blandowski label, but the label on part C is written by Mueller. A fragment of part C appears to have been remounted on a separate sheet (MEL658695). Additionally there is a sheet at K (K1089750) with two elements and labelled 'Mt. Korong and Mt. Mclvor, F. Mueller'. It seems likely that all of these were collected by Blandowski (not Mueller), and possibly some or all are from the type gathering. It is unclear on the K specimen which element (if any) was collected at Mt. Korong, or if this is just an indication that similar plants occur there. Due to this uncertainty, it seems most appropriate to treat these other specimens (MEL658694B, C, MEL658695, K1089750) as possible isotypes.

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